CLAIMS

That which is claimed is:

1. An isolated peptide consisting of an amino acid sequence selected from sequences set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5 or SEQ ID NO: 6.

2. The isolated peptide according to claim 1, further comprising a viral carrier protein conjugated to the amino acid sequence.

3. A therapeutic composition comprising at least one peptide having an amino acid sequence consisting of an amino acid sequence selected from sequences set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5 or SEQ ID NO: 6.

4. The therapeutic composition according to claim 3, wherein the amino acid sequence is conjugated to a carrier protein.

5. The therapeutic composition according to claim 4, wherein the carrier protein is a viral carrier protein.

6. The therapeutic composition according to claim 5, wherein the viral carrier protein is selected from the group consisting of gag, env, nef and fragments thereof.

7. The therapeutic composition according to claim 1, further comprising a pharmaceutically acceptable carrier.

8. A therapeutic vaccine comprising at least one Tat linear epitope peptide comprising from about 15 to about 21 amino acid residues from the amino terminus region of HIV Tat, wherein the amino acid sequence comprises at least amino acid residue 1, 7 and 12.

9. The therapeutic vaccine according to claim 8, wherein the Tat linear epitope peptide is conjugated to a carrier protein.

10. The therapeutic vaccine according to claim 9, wherein the carrier protein is ovalbumin or a viral carrier protein.

11. The therapeutic vaccine according to claim 10, wherein the viral carrier protein is gag, env, nef or fragments thereof.

12. A method to induce production of neutralizing Tat antibodies that inhibit internalization of Tat into T-cells, the method comprising:

administering to a subject a effective amount of a vaccine to induce production of neutralizing Tat antibodies, the vaccine comprising at least one peptide having at least 15 amino acid residues from the amino terminus region of Tat conjugated to a viral carrier protein, wherein the amino acid sequence comprises at least amino acid residue 1, 7 and 12.

13. The method according to claim 12, wherein the peptide is selected from sequences set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5 or SEQ ID NO: 6.

14. The method according to claim 13, wherein the viral carrier protein is env, gag, nef or fragments thereof.

15. The method according to claim 14, wherein the vaccine is administered contemporaneously with an antiviral agent.

16. The method according to claim 15, wherein the antiviral agent is selected from nucleoside RT inhibitors, CCR5 inhibitors/antagonists, viral entry inhibitors or their functional analogs.

17. A therapeutic method of reducing HIV infection, comprising:

administering to a patient a composition comprising at least one peptide having at least about 15 to about 21 amino acid residues from the amino terminus region of Tat, wherein the amino acid sequence comprises at least amino acid residue 1, 7 and 12, wherein the peptide is administered in an effective amount to induce production of cross-reactive antibodies for Tat neutralization.

18. The therapeutic method according to claim 17, wherein the peptide is selected from sequences set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5 or SEQ ID NO: 6.

19. The therapeutic method according to claim 18, wherein the viral carrier protein is env, gag, nef or fragments thereof.

20. The therapeutic method according to claim 19, wherein the peptide/viral carrier protein conjugate is administered contemporaneously with an antiviral agent.

21. The therapeutic method according to claim 20, wherein the antiviral agent is selected from nucleoside RT inhibitors, CCR5 inhibitors/antagonists, viral entry inhibitors or functional analogs thereof.

22. A polynucleotide sequence comprising a nucleotide sequence encoding a peptide having at least about 15 to about 21 amino acid residues from the amino terminus region of HIV Tat, wherein the peptide comprises at least amino acid residue 1, 7 and 12.

23. The polynucleotide sequence according to claim 22, wherein the nucleotide sequence is selected from sequences set forth in SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11 or SEQ ID NO: 12.

24. The polynucleotide sequence according to claim 23, wherein the nucleotide sequence encoding the peptide is linked to a nucleotide sequence encoding a viral carrier protein.

25. The polynucleotide sequence according to claim 24, wherein the viral carrier protein is gag.

26. An expression vector comprising the polynucleotide sequence according to claim 22.

27. An expression vector comprising the polynucleotide sequence according to claim 23.

28. An expression vector comprising the polynucleotide sequence according to claim 25.

29. A host cell comprising the expression vector according to claim 26.

30. A host cell comprising the vector according to claim 27.

31. A host cell comprising the expression vector according to claim 28.

32. A method of expressing a Tat amino terminus linear epitope peptide comprising the steps of:

(a) transfecting a recombinant host cell with a polynucleotide according to claim 22; (b) culturing the host cell under conditions sufficient for expression of the Tat amino terminus linear epitope peptide; (c) recovering the Tat amino terminus linear epitope peptide.

33. A method of expressing a Tat amino terminus linear epitope peptide comprising the steps of:

(a) transfecting a recombinant host cell with a polynucleotide according to claim 23; (b) culturing the host cell under conditions sufficient for expression of the Tat amino terminus linear epitope peptide; (c) recovering the Tat amino terminus linear epitope peptide.

34. A method of expressing a Tat amino terminus linear epitope peptide comprising the steps of:

(a) transfecting a recombinant host cell with a polynucleotide according to claim 25; (b) culturing the host cell under conditions sufficient for expression of the Tat amino terminus linear epitope peptide; (c) recovering the Tat amino terminus linear epitope peptide.

35. A Tat amino terminus linear epitope peptide comprising at least about 15 to about 21 amino acid residues from the amino terminus region of HIV Tat, wherein the peptide comprises at least amino acid residue 1, 7 and 12.

36. A monoclonal antibody immunoreactive with a Tat amino terminus linear epitope peptide according to claim 35.

37. An antibody immunoreactive with a Tat amino terminus linear epitope peptide according to claim 1.

38. An antibody immunoreactive with a Tat amino terminus linear epitope peptide according to claim 2.

39. A method of producing an antibody that is immunoreactive with a Tat amino terminus linear epitope peptide comprising the steps of:

(a) introducing a Tat amino terminus linear epitope peptide according to claim 35 into a live animal subject; and

(b) recovering the antibody

40. A method of producing an antibody that is immunoreactive with a Tat amino terminus linear epitope peptide comprising the steps of:

(a) introducing a Tat amino terminus linear epitope peptide according to claim 1 into a live animal subject; and

(b) recovering the antibody

41. A method of detecting a Tat peptide in a sample comprising:
immunoreacting the sample with an antibody according to claim 36 to form an antibody-peptide conjugate: and
detecting the antibody-peptide conjugate.

42. A method of detecting a Tat peptide in a sample comprising:
immunoreacting the sample with an antibody according to claim 37 to form an antibody-peptide conjugate: and
detecting the antibody-peptide conjugate.

43. A method of detecting a Tat peptide in a sample comprising:

immunoreacting the sample with an antibody according to claim 37 to form an antibody-peptide conjugate: and

44. A diagnostic assay kit for detecting the presence of an antibody in a biological sample immunoreactive to a Tat amino terminus linear epitope, the kit comprising:
at least one Tat amino terminus linear epitope peptide according to claim 35 in a first container; and
a second antibody with an indicator that immunoreacts with an antibody in the biological sample that immunoreacts with the Tat amino terminus linear epitope peptide in the first container.

45. A method of generating a Tat amino terminus linear epitope peptide/viral carrier protein chimera comprising the steps of:
covalently attaching an immunogenic viral carrier protein to the Tat amino terminus linear epitope peptide according to claim 35 to form the chimera.